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Building & Highway Material Testing Laboratory

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Job No.: CTCE/BBMP/W.No.08/KVS/WMM/Gradation/2014-15 10.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. K.V. Subba Reddy,** Contractor, Bangalore.

Name of Work : Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012

Date of Testing : 10.07.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **8855**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	290	290	3.3	96.7	95-100
22.4	2980	3270	36.9	63.1	60-80
11.2	1745	5015	56.6	43.4	40-60
4.75	1260	6275	70.9	29.1	25-40
2.36	685	6960	78.6	21.4	15-30
0.600	730	7690	86.8	13.2	8-22
0.075	815	8505	96.0	4.0	0-8

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Job No.: CTCE/BBMP/W.No.08/KVS/WMM/AIV/2014-15 10.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. K.V. Subba Reddy,** Contractor, Bangalore.
Name of the Work	Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	10.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	301	
4	Aggregate Impact value = percent fines	22.08	22.62	
	100* (W_2/W_1)%			22.35

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.08/KVS/WMM/S-T/2014-15 10.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. K.V. Subba Reddy,** Contractor, Bangalore.
Name of Work	Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	10.07.2014

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Result : Flakiness Index = **12.63%**

Elongation Index = **13.47%**

Result : Combined Flakiness & Elongation index 26.10%

Comments:

→ Maximum allowable Flakinee & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.08/KVS/SDBC/AIV/2014-15 15.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. K.V. Subba Reddy,** Contractor, Bangalore.
Name of the Work	Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	15.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	380	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	88	82	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	291	298	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	23.22	21.58	22.40

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.08/KVS/SDBC/Shape_T/2014-15 : 15.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. K.V. Subba Reddy,** Contractor, Bangalore.
Name of Work	: Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 15.07.2014

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Result : Flakiness Index = **11.06%**

Elongation Index = **13.10%**

Result : Combined Flakiness & Elongation index **24.16%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.08/KVS/SDBC/Sp_Wa/2014-15

15.07.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. K.V. Subba Reddy,** Contractor, Bangalore.
Name of the Work	Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	15.07.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2018	2019	2020	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1263	1264	1265	
4	Weight of saturated surface dry aggregate in air	W_3 g	2016	2015	2014	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	753	751	749	
6	Weight of oven dried aggregate	W_4 g	1998	1999	2000	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.653	2.662	2.670	2.662
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.718	2.720	2.721	2.720
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.90%	0.80%	0.70%	0.80%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/W.No.08/KVS/SDBC/Stripping/2014-15 · 15.07.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. K.V. Subba Reddy,** Contractor, Bangalore.
Name of the work	Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	15.07.2014

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.30	96.70
2	3.2		
3	3.4		

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Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.08/KVS/CUBE/2014-15 26.07.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. K.V. Subba Reddy,** Contractor, Bangalore.

Name of the work : Construction of CC drain with Covering slab from Kodigehalli circle to Govt. School in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/TEND/02(89)/W.O/73/2012-13 Dated: 14.08.2012

Sample ID : Drain Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 7^{th} day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.07.2014	26.07.2014	8.367	355.8	15.81
2	19.07.2014	26.07.2014	8.268	346.7	15.41
3	19.07.2014	26.07.2014	8.475	363.9	16.17

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Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 7^{th} day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.07.2014	26.07.2014	8.364	353.2	15.70
2	19.07.2014	26.07.2014	8.197	345.2	15.34
3	19.07.2014	26.07.2014	8.215	368.4	16.37

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Grade of Concrete : M_{20}

Compressive Strength as on : 7^{th} day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.07.2014	26.07.2014	8.563	364.9	16.22
2	19.07.2014	26.07.2014	8.471	356.3	15.84
3	19.07.2014	26.07.2014	8.316	349.4	15.53

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